

**Notice of Allowability**

Application No.

09/842,387

Applicant(s)

GROVE ET AL

Examiner

Cam Y T. Truong

Art Unit

2162

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/30/2005.
2. ☒ The allowed claim(s) is/are 6-10, 12, 13, 46 49, 51-53.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                      |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                              |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance             |
|   | 9. <input type="checkbox"/> Other _____  |

### **DETAILED ACTION**

1. Applicant has amended claims 1, 6, 12, 13, and canceled claims 2-3, 11, 14-45 in the amendment filed on 9/30/2005.

Claims 1, 4-10, 12-13, 46, 48-53 are pending in this Office Action.

#### ***Drawings***

2. Drawing filed on 9/8/2005 is accepted.

#### ***Specification***

3. Specification filed on 10/17/2005 is considered and accepted.

### **EXAMINER'S AMENDMENT**

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Michael L. Gencarella, Reg. No. 44,703 on 10/14/2005.

Please replace claims 6, 12, 49, 51-53 with amended claims 6, 12, 49, 51-53 and cancel claims 1, 4-5, 48 and 50.

6. (Currently Amended) A computer implemented method of inserting data segments into a sorted tree structure, comprising:

providing a data structure separate from the sorted tree structure, the data structure having:

a head representing a first pointer to a first leaf node of the sorted tree structure;

a tail representing a second pointer to a second leaf node of the sorted tree structure; and

a body, physically adjacent to the head and to the tail, having a set of pointers pointing to contiguous empty nodes of the sorted tree structure;

the providing of the data structure including:

examining the first leaf node of the sorted tree structure associated with the head of the data structure;

identifying a first leaf node index associated with the head;

copying contents of the first leaf node index from the head to the tail of the data structure;

determining a direction in which the data structure is traversing the sorted tree structure;

updating indices within the sorted tree structure according to an order based upon the direction in which the data structure is traversing the sorted tree structure;

deleting contents of the head when inserting a data segment into the sorted tree structure such that empty spaces are evenly distributed among non-empty leaf nodes; redistributing the empty spaces among the non-empty leaf nodes by employing the data structure, wherein the redistributing empty spaces maintains a consistent lookup operation on the sorted tree structure.

12. (Currently amended) The method of claim 6, wherein the step of redistributing the empty spaces includes traversing the sorted tree structure in one of a first direction and a second direction.

49. (Currently amended) The method of claim 6, further comprising: moving the tail of the data structure according to a pre-calculated increment.

51. (Currently amended) The method of claim 6, wherein if the direction in which the data structure is traversing the sorted tree structure is towards a beginning of the tree, then the method includes,

updating the indices between the tail and a nearest non-empty leaf node from a lowest tree level to a highest tree level.

52. (Currently amended) The method of claim 51, further comprising: updating a remainder of the sorted tree structure from the highest tree level to the lowest tree level

53. (Currently amended) The method of claim 6, wherein if the direction in which the data structure is traversing the sorted tree structure is towards an end of the sorted tree structure, then the method includes, updating the indices from a lowest tree level to highest tree level.

***Allowable Subject Matter***

4. Claims 6-10, 12-13, 46, 49, and 51-53 are allowed.

The prior art of record, alone or in combination, does not teach or fairly suggest the combination of steps as recited in independent claim 6, wherein "the providing of the data structure including: a body, physically adjacent to the head and to the tail, having a set of pointers pointing to contiguous empty nodes of the sorted tree structure copying contents of the first leaf node index from the head to the tail of the data structure; updating indices within the sorted tree structure according to an order based upon the direction in which the data structure is traversing the sorted tree structure; deleting contents of the head when inserting a data segment into the sorted tree structure such that empty spaces are evenly distributed among non-empty leaf nodes; redistributing the empty spaces among the non-empty leaf nodes by employing the data structure, wherein the redistributing empty spaces maintains a consistent lookup operation on the sorted tree structure".

The dependent claims, bring definite, further limiting, and fully enabled by the specification are also allowed.

**Contact Information**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cam Y T. Truong whose telephone number is (571) 272-4042. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Cam Y T Truong  
Examiner  
Art Unit 2162